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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/547,196	08/26/2005	Miha Fuderer	PHNL030137US	7973

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595 MINER ROAD
CLEVELAND, OH 44143

EXAMINER

FETZNER, TIFFANY A

ART UNIT	PAPER NUMBER
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2859

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/547,196

Applicant(s)

FUDERER ET AL.

Examiner

Tiffany A. Fetzner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/26/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on **8/26/2005** is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement of **8/26/2005**. The initialed and dated information disclosure statement of **8/26/2005** is attached to this office action,

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

A) In **figure 2** components **M** and **P1** are shown but not described in the description of **figure 2**.

B) **Component 1**, which is described at other locations in the disclosure, with respect to other figures, is not described with respect to **figure 2**. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. **Claim 13** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

6. **Claim 13** presents a **computer program product** (i.e. improper terminology), **which** is considered to be a data structure that does not define any functional interrelationships with the other claimed aspects of the invention, which permit the data structure's functionality to be realized. It has been held that such a data structure is considered to be non-statutory under 35 U.S.C. 101 (See e.g., *Warmerdam* 33 F.3d at 1361, 31 USPQ2d at 1760).

7. Further, apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement (See *Arrhythmia*, 958 F.2d at 1057, 22 USPQ2d at 1036). Merely claiming nonfunctional descriptive material stored in a **computer-readable medium** does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application. In the instant case, the limitations of **claim 13** only provide computer readable code configured to execute processes. These processes, however, are not actually being executed, and therefore the claimed limitations do not provide any "useful, concrete, and tangible" result. Additionally, the examiner notes that while the preamble states that the **computer program product** (i.e. terminology of **computer program product** is presently improper terminology) is used for forming an image, there is no image actually formed.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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9. **Claims 1-13** are rejected under **35 U.S.C. 102(e)** as being anticipated by **Zhu et al.**, US patent **7,009,396 B2** issued March 7th 2006, filed **September 12th 2002**.

10. With respect to **Method Claim 1**, corresponding **apparatus claim 11**, and corresponding **computer program product claim 13** (i.e. **101 problem claim 13**, See above 101 rejection as well) **Zhu et al.**, teaches and shows "A magnetic resonance imaging method for forming an image of an object from a plurality of signals sampled in a restricted homogeneity region of a main magnet field of a magnetic resonance imaging apparatus" [See abstract, figures 1 through 4, col. 3 line 65 through col. 4 line 2; col. 1 lines 27 through col. 2 line 50; col. 8 line 28 through col. 9 line 20], "wherein a patient disposed on a table is moved continuously through the bore of the main magnet" [See figures 1, 2, 3; col. 2 lines 20-50; col. 5 lines 6-42] "and spins in a predetermined area of the patient" (i.e. the homogeneous useable volume, col. 4 line 2; col. 1 lines 27 through col. 2 line 50; col. 8 line 28 through col. 9 line 20) "are excited by an excitation pulse from a transmitter antenna" [See col. 5 lines 11-13; col. 7 line 60 through col. 9 line 10], "such that an image is formed over a region exceeding largely the restricted region" [See col. 1 line 33 through col. 2 line 17; col. 8 line 64 through col. 9 line 20], "wherein data is undersampled" (i.e. the reduction of the k-space sampling density that leads to aliasing along the phase encoding directions in each of the regional images, is undersampling.) [See col. lines 37-39] "in the restricted region" (i.e. the homogeneous useable volume, col. 4 line 2; col. 1 lines 27 through col. 2 line 50; col. 8 line 28 through col. 9 line 20) "by means of at least one receiver antenna in a plurality of receive situations being defined as a block of measurements contiguous in time having preserved magnetisation and presaturation conditions within the excited area of the patient", [See col. 5 line 9 through col. 9 line 20] "and fold-over" (i.e. aliasing) "artefacts due to said undersampling are unfolded by means of the sensitivity pattern of the receiver antenna and/or the properties of selected factors determining said receive situations." [See col. 7 line 60 through col. 9 line 20, especially col. 8 lines 37-61.]

11. With respect to **Claim 2**, **Zhu et al.**, teaches "the fold-over artefacts are unfolded by means of the excitation profile as selected factor." [See col. 65 line 64 through col. 6

line 7] The same reasons for rejection, which apply to **claim 1** also apply to **claim 2** and need not be reiterated.

12. With respect to **Claim 3, Zhu et al.**, teaches that “the magnetization” (i.e. the B1 field) “and presaturation profile” (i.e. the sensitivity weighting at different table locations for each coil element) is utilized “as a selected factor” for removing (i.e. unfolding) aliasing / ghosting / “fold-over” artifacts in the resulting images. [See col. 5 lines 34-42, col. 7 line 60 through col. 8 line 61.] The same reasons for rejection, which apply to **claim 1** also apply to **claim 3** and need not be reiterated.

13. With respect to **Claim 4, Zhu et al.**, teaches that “the means of the frequency-response pattern of the receiver as” a “selected factor” for removing (i.e. unfolding) aliasing / ghosting / “fold-over” artifacts in the resulting images.” [See col. 7 line 60 through col. 8 line 43; col. 5 lines 6-57]. The same reasons for rejection, which apply to **claim 1** also apply to **claim 4** and need not be reiterated.

14. With respect to **Claim 5, Zhu et al.**, teaches that “during sampling of data within the restricted region the table will be moved over at most one half of the size of the restricted region.” [See col. 6 line 8 through col. 7 line 26.] The same reasons for rejection, which apply to **claim 1** also apply to **claim 5** and need not be reiterated.

15. With respect to **method Claim 6**, and corresponding **apparatus claim 12, Zhu et al.**, teaches and shows “at least one global receiver antenna” (i.e. RF antenna component 152) “disposed in a fixed relationship to the main magnet system” (i.e. the main magnet assembly 141) “and a plurality of local receiver antennae” (i.e. components 250, 251, and 251 in figure 2 or transceiver module 150) “disposed in a fixed relationship to the patient on the table” (i.e. patient table and positioning device 134) “are provided” [See figures 1 and 2 in combination along with the teachings of col. 3 line 52 through col. 5 line 33.] The same reasons for rejection, which apply to **claims 1, 11** also apply to **claims 6, 12** and need not be reiterated.

16. With respect to **Claim 7, Zhu et al.**, teaches that the B1 field map for each coil element, has a different sensitivity at each table locations and is utilized as a reference means to correct and remove artifacts, which comprise ghosting / aliasing / wrap-around / fold-over problems etc., therefore **Zhu et al.**, teaches that “a reference scan” (i.e. a B1

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field map) "is provided for obtaining the sensitivity pattern" (i.e. the different sensitivity weightings) "of the receiver antenna" for each receiver antenna element." [See col. 8 lines 21-61, col. 5 lines 35-42; col. 4 lines 47-63; col. 1 line 66 through col. 2 line 12.]

The same reasons for rejection, which apply to **claim 1** also apply to **claim 7** and need not be reiterated.

17. With respect to **Claim 8, Zhu et al.**, teaches that "data is acquired in a number of discrete reference scan segments at different table positions in the restricted region" [See col. 8 lines 21-61, col. 5 lines 35-42; col. 4 lines 47-63; col. 3 line 65 through col. 4 line 2, col. 1 line 66 through col. 2 line 12.] "whereas during each reference scan" (i.e. the B1 scan for each coil, stored in memory, [See col. 8 lines 21-61, col. 4 lines 47-63.] "the table stands still" [See col. 1 lines 48-55, where holding the patient table stationary, is an already known and taught prior art alternative to the more desirable method of moving the patient table continuously while obtaining the measurements desired, and does not constitute a novel, or nonobvious difference.] "and from the data obtained by the reference scans the sensitivity patterns of the local coils are calculated". [See col. 8 lines 21-61, col. 5 lines 35-42; col. 4 lines 47-63; col. 1 line 66 through col. 2 line 12.] The same reasons for rejection, which apply to **claims 1, 7** also apply to **claim 8** and need not be reiterated.

18. With respect to **Claim 9, Zhu et al.**, teaches that "the table is moved at a speed which is less than half of the homogeneity volume of the main magnet over the scan time of k-space, whereas k-space is continuously scanned in a row-to-row manner, and the sensitivity profiles of the local coils are calculated by interpolation of the measured profiles at different table positions." [See col. 1 line 33 through col. 8 line 61 as this is a main feature of the **Zhu et al.**, reference, which is explained in detail, throughout the reference.] The same reasons for rejection, which apply to **claims 1, 7** also apply to **claim 9** and need not be reiterated.

19. With respect to **Claim 10, Zhu et al.**, teaches that "the sampled data is reconstructed in an iterative manner, in that data sampled largely offset of the centre of the main magnet, which is folding-in" (i.e. ghosting / aliasing) "on the data sampled in the centre of the main magnet, is purposely distorted" [See col. 6 line 8 through col. 8

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line 61] "such that a undistorted image is reconstructed and subtracted from the fold-in" (i.e. aliased / ghosted) "image" from the detailed teachings and explanations of [Col. 2 lines 20-51; and col. 3 line 65 through col. 8 line 61.] The same reasons for rejection, which apply to **claim 1** also apply to **claim 10** and need not be reiterated.

20. **Claims 1-13** are also rejected under **35 U.S.C. 102(e)** as being anticipated by **Zhu et al.**, US patent application publication **2004/0051529 A1** published March 18th 2004, which corresponds to the issued above applied reference of **Zhu et al.**, US patent **7,009,396 B2** issued March 7th 2006, filed **September 12th 2002**. Therefore the same reasons of rejection provided previously also apply to the **Zhu et al.**, US patent application publication **2004/0051529 A1** published March 18th 2004, and need not be reiterated for the sake of brevity.

Prior Art of Record

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) **Zhu** US patent application publication 2003/0004408 A1 published Jan. 2nd 2003, filed April 19th 2001.

B) All of the **Brittain** and **Brittain et al.**, references noted on the attached Notice of references cited.

Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

24. Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tiffany A. Tesner

TAF

March 30, 2007

Brij Shrivastav
3.30.07

**BRIJ SHRIVASTAV
PRIMARY EXAMINER**